

Attorney's Docket: 2002DE141
Serial No.: 10/532,565
Response to Non-final Office Action Mailed 03/21/2007

REMARKS

The Office Action mailed March 21, 2007 has been carefully considered together with each of the references cited therein. The amendments and remarks presented herein are believed to be fully responsive to the Office Action. Reconsideration of the present Application in view of the following remarks is respectfully requested.

Applicant would like to thank the Examiner and the Examiner's supervisor for the opportunity to discuss the merits of the case in a telephonic interview on 20 November 2007, with Applicant's representative Mr. Silverman. In the interview, Mr. Silverman pointed out the differences between the prior art and the instant invention with particular emphasis on the following:

1. The prior art process occurred in a gas atmosphere and a carrier or sweep gas was required to maintain the gas atmosphere and required to remove the product of the reaction or mixing operation.
2. The instant invention is carried out in a swirl chamber having an internal space which is almost completely filled with liquid and wherein the liquid mixing occurs under turbulent flow conditions.

It was suggested that the Applicant amend the claims to reflect that the swirl chamber is almost completely filled with liquid.

Applicant has amended the claims to more clearly recite what Applicant believes to be the invention. In claim 1, Applicant amended claim 1 to recite that the two or more liquids were sprayed into a swirl chamber having an internal space and having a cross-sectional area, wherein the two or more nozzles are not coaxially aligned with one another, at a pressure of between 1 and 1000 bar, and with a volume flow of between 5 and 500 l/h, to almost completely fill the internal space of the swirl chamber with a liquid phase and to induce turbulent mixing of the liquid phase, with physical alteration, and, after physical alteration has taken place, discharging the liquid phase continuously from the swirl chamber through an outlet

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aperture without the use of a carrier gas stream. Support for the amendment to claim 1 may be found in Applicant's Specification on page 2, lines 18-20, and 30-33, and page 3, lines 1-4, and lines 21 – 24 and in originally filed claim 1. Claims 12 and 16 were amended to recite that the swirl chamber has an internal space. Support for the amendment to claims 12 and 16 may be found in page 2, lines 18-20, and 30-33, and page 3, lines 1-4, and lines 21 – 24 and in originally filed claim 16. It is believed that no new matter has been added by this amendment.

Applicant's invention represents an improvement in the art of preparing organic pigments. Prior art methods relied on introducing the reactants into a gas atmosphere wherein high velocity reactant streams or jets are injected into a gas space of reactor in a manner such that the jets do not impinge on the walls of the reactor. This was accomplished by focusing the jets at a point away from the reactor walls which required the jets to collide in the gas atmosphere for mixing to take place. Still further, a sweep gas or carrier gas stream was passed through the reaction zone and acted to carry the product of the reaction (the pigment) from the reaction zone. However, it was difficult to maintain the focal point or point of conjoint collision of the reactant streams, particularly in a commercial system where flow interruptions in one jet or another may occur, often resulting in the plugging of the reactor. Applicant's invention represents a significant improvement by injecting the liquid reactants, not into a gas phase, but instead injecting the liquid reactants directly into a mixing or swirl chamber internal space which is almost completely filled with the liquid phase, and wherein turbulent mixing takes place in the liquid phase. In Applicant's invention there is no requirement to maintain a point of collision of reactants in a gas atmosphere, and there is no requirement for a carrier gas to sweep the reaction zone to maintain a gas atmosphere in the reaction chamber and to remove the resulting product pigment. Furthermore, Applicant achieved a more stable operation by carrying out the reaction in an all liquid phase under turbulent conditions and further by inducing turbulent mixing in a swirl chamber.

Claims 1-12 and 16-20 were rejected under 35 U.S.C. §102(b) as being anticipated by Dietz et al. (US 6,337,364) ('364 Patent). The rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by Dietz et al. (US 6,337,364) should be withdrawn for the reason that the '364 Patent does not disclose all of the

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elements of Applicant's invention. The '364 Patent discloses and claims a method for the fine division of pigments which comprises dissolving one or more coarsely crystalline crude pigments in a solvent and precipitating them with a liquid precipitation medium by spraying them with a liquid precipitation medium by spraying the pigment solution and the precipitation medium through nozzles "to a point of conjoint collision in a reactor chamber (See the '364 Patent at column 1, lines 50-56) The '364 Patent defines the "point of conjoint collision" as the collision point at which the jets impinge on one another(See column 1, line 56 and column lines 8-15 and by way of illustration at lines 49-52). **Further, the '364 Patent requires the presence of a carrier gas to be passed through the reactor chamber in the vicinity of the collision point to maintain the gas atmosphere in the reactor chamber** (See Abstract and col. 1, lines 59-61 and claim 1) "especially at the point of collision of the jets" and to carry or remove the pigment suspension from the reactor and provide effective cooling of the reactor and to prevent wear on the reactor internal surfaces (See column 1, lines 59-66 and Column 2, lines 11-15). There is no swirl chamber which is almost completely filled with the liquid phase disclosed in the '364 Patent., and it is not disclosed that any swirl is or would be created at the point of conjoint collision, especially if the resulting suspension is immediately removed from the reactor with a carrier or purge gas (See '364 Patent at claim 1). Applicant's invention differs from the methods disclosed in the '364 Patent in the following ways:

1. reactants are not injected into a gas filled space
2. there is no point of conjoint collision in a gas atmosphere
3. there is no carrier gas
4. there is a swirl chamber for turbulent mixing of an all liquid phase.

According to Applicant's invention, the pigment liquids or suspensions are introduced into a swirl chamber by two or more nozzles which are not "coaxially aligned" to almost completely fill the internal space of the swirl chamber and to induce turbulent mixing of the liquid phase, and the mixed liquid phase is continuously discharged from the swirl chamber through an outlet aperture without the use of a carrier or sweep gas stream. Applicant's claim 1 specifically recites that

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the nozzles are "not coaxially aligned" which anyone skilled in the art would recognize that when the nozzles are not mounted on or do not have a common axis (coaxially aligned), this would result in the absence of a "point of conjoint collision", and furthermore, claim 1 recites that the instant method is accomplished "without the use of a carrier gas stream". It is fundamental that all of the elements of a claim must be found united in the same way to perform the identical function for a reference to establish anticipation. Anticipation is a technical defense which must meet strict standards. Unless all of the same elements are found in exactly the same situation and united in the same way to perform the identical function in a single prior art reference, there is no anticipation. Therefore, the rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by Dietz et al. (US 6,337,364) should be withdrawn for the reason that the '364 Patent does not disclose all of the elements of Applicant's invention.

The rejection of claims 2-12 under 35 U.S.C. §102(b) as being anticipated by Dietz et al. (US 6,337,364) should be withdrawn for the reasons given in support of claim 1 from which they depend.

The rejection of claims 16-20 under 35 U.S.C. §102(b) as being anticipated by Dietz et al. (US 6,337,364) should be withdrawn for the reason that the apparatus of the '364 patent as discussed hereinabove with reference to claim 1 and for the reason that apparatus of the '364 Patent does not have all the elements of the apparatus of the instant invention and the apparatus of the '364 specifically differs from the apparatus of the instant invention as follows:

1. the apparatus of the instant invention has a swirl chamber having an internal space for turbulent mixing of a liquid phase, whereas the '364 Patent requires a coaxial nozzle alignment to create a point of conjoint collision in a gas phase to provide the mixing,
2. the apparatus of the '364 Patent requires a means for introducing and withdrawing a carrier gas to maintain the gas phase and to immediately remove the resulting product and gas from the chamber,

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3. the apparatus of the '364 Patent does not have a swirl chamber and removes any liquid suspension immediately after the point of conjoint collision.

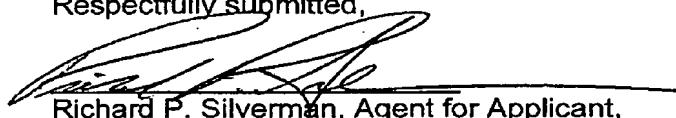
Claims 13-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,537,364 to Dietz et al. (hereinafter '364 Patent), as applied to claims 1 and 12. The rejection of claims 13-15 under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,537,364 to Dietz et al., as applied to claims 1 and 12 should be withdrawn for the reasons given in support of claims 1, 12 and claim 16 hereinabove and for the reason that the '364 patent teaches away from Applicant's invention by requiring that there be a gas atmosphere in the reactor chamber, and requiring that the inlet jets for injecting the reactants be directed to a point of conjoint collision of the pigment containing jets. Applicant's process takes place essentially in an all liquid mixing swirl chamber, wherein the internal space of the swirl chamber is almost completely filled with liquid under turbulent flow conditions. The '364 Patent requires a gas filled chamber and a sweep gas to maintain the gas atmosphere and to withdraw the resulting mixture. Conjoint collision cannot and does not occur in Applicant's invention, because Applicant requires that the jets not be coaxially aligned in order to provide turbulent mixing in a liquid phase in a swirl chamber. The variations in the angle at which the jets strike one another does not change the requirement that the jets in the '364 Patent still must have a point of conjoint collision. Furthermore, anyone skilled in the art would recognize that to modify the method or apparatus of the '364 Patent by realigning the nozzles so that the nozzles were not coaxially aligned would eliminate this required point of conjoint collision (See column 1, line 56 and claim 1) and removing the gas phase would make the process of the '364 patent inoperable.

It is respectfully submitted that, in view of the above remarks, the objections to the specification and the claims, the rejections under 35 U.S.C. §102 should be withdrawn and that this application is in a condition for an allowance of all pending

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claims. Accordingly, favorable reconsideration and an allowance of all pending claims are courteously solicited.

Respectfully submitted,



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